Bachelor of Science (B.Sc.) Semester—II Examination

CHEMISTRY (ORGANIC CHEMISTRY)

(Old and New)

Compulsory Paper—1 (CH-201)

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All **FIVE** questions are compulsory and carry equal marks.

(2) Write chemical equations and draw diagrams wherever necessary.

1. (A) What is hybridization ? Explain the formation of Ethylene molecule on the basis of hybridization. 5

(B) Explain with example :

(i) Homolytic bond fission and

(ii) Heterolytic bond fission. 5

OR

(C) Write a note on Hydrogen bonding in organic compounds. 2½

(D) Write short account on "Inductive effect". 2½

(E) Define terms with suitable example :

(i) Substitution reaction and

(ii) Rearrangement reaction. 2½

(F) What are reactive intermediates ? Explain the stability of Carbonium ions. 2½

2. (A) What is Conformation ? Explain conformational isomerism of n-Butane. 5

(B) What is Resolution ? Explain :

(i) Biochemical and

(ii) Chemical separation. 5

OR

(C) Write a note on optical isomerism of Tartaric acid. 2½

(D) Discuss Geometrical isomerism in fumaric acid and maleic acid. 2½

(E) Explain "Walden Inversion". 2½

(F) Give difference between configuration and conformation. 2½

3. (A) Discuss conformational analysis of Cyclohexane. 5

(B) What is Markownikoff's rule ? Give the ionic mechanism of addition of HBr to Propylene. 5

OR

(C) Give the mechanism of free radical chlorination of methane. 2½

(D) Write a short note on LPG. 2½

(E) How propene is prepared from :

(i) n-propyl bromide and

(ii) n-propyl alcohol ? 2½

(F) What happens when propylene reacts with :

(i) Alkaline cold $KMnO_4$ solution and

(ii) Hot $KMnO_4$ solution ? 2½

4. (A) What are dienes ? Give their classification. Write chemical reactions of 1, 3-Butadiene with (i) HBr and (ii) Br_2. 5

(B) Explain the mechanism of sulfonation of benzene with energy profile diagram. 5

OR

(C) Write a note on acidic nature of acetylene. 2½

(D) Discuss Diels-Alder reaction with example. 2½

(E) Discuss the structure of benzene on the basis of resonance. 2½

(F) Explain aromaticity of :

(i) Cyclopentadienyl anion and

(ii) Cycloheptatrienyl cation. 2½

5. Solve any **TEN** of following :

(i) Draw hyperconjugation structures of ethyl carbocation. 1

(ii) Define carbanion with example. 1

(iii) Draw M.O. diagram of ethane molecule. 1

(iv) What is stereogenic centre ? 1

(v) Draw Newman projection formulae of n-Butane. 1

(vi) What is Enantiomer ? 1

(vii) How will you prepare Ethane by Wurtz reaction ? 1

(viii) Define octane number. 1

(ix) What is peroxide effect ? Give example. 1

(x) Draw orbital diagram of benzene molecule. 1

(xi) What is oxyacetylene flame ? 1

(xii) How will you prepare 1, 3-Butadiene from n-Butane ? 1